

Emphatic Tendency Scale for Student Teachers: Validity and Reliability Studies

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Abstract

The purpose of this study was to analyze the validity and reliability of the Empathic Tendency Scale, which was developed in order to identify student teachers' empathic tendencies. The sampling of the study consisted of 730 student teachers studying at Hacettepe University Faculty of Education. To determine the factor pattern of Empathic Tendency Scale, firstly exploratory factor analysis was carried out and it was found that 29 items had a three-dimensional structure. The Cronbach Alpha (α) reliability coefficient of Empathic Tendency Scale was calculated to be .94; where Empathic Skill subdimension was .91; Empathic Environment subdimension was .88, and Anti-empathetic Attitude subdimension was .82. The test-retest correlation coefficient was calculated to be .83. Exploratory factor analysis was followed by the confirmatory factor analysis applied to the obtained structure. Based on these findings, Empathic Tendency Scale was found to be reliable and valid for determining student teachers' empathic tendencies.

Key Words

Empathic Tendencies, Reliability, Validity, Factor Analysis.

Empathy is the process where individuals understand the thoughts and feelings of another while feeling the same way and communicating this to the other under a certain circumstance. Empathy, in educational settings, is a tool in establishing an effective communication between educators and students and in the implementation of training programs; and as well it is a feature, which should be attained by the future planners of the education sector (Ford, 1979 cited in Uğur, 2007; Köksal & Koçer, 2005; Rogers, 1983). While empathy was seen as an innate ability, today's authors and educators see empathic communication as a skill that can be learned and taught (Plomin, 1990). Delisio (2006) stated that although most people see empathy as a characteristic trait, in reality, empathy is a social skill, which can and ought to be taught in schools. In addition, given the need for mutual

understanding and love between teachers and students, empathy could be clearly seen as a necessity. In this respect, teachers have to use and make beneficial use of empathy in their communications regarding both learning and teaching dimensions. Therefore, attitude scales to determine empathic tendencies of student teachers in different subject areas shall be developed. Nowadays, many different scales have been developed to assess empathy (Dökmen, 1987, 1988; Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004) however; there are important limitations of each.

When investigated the studies about empathy, it's seen that there are many variables related with empathy (Akkoyn, 1982 cited in Uğur, 2007; Alisinanoğlu & Köksal, 2000; Altekin, 1995; Barnes & Thagard, 2001; Bellous, 2001 cited in Özbek, 2004; Clark, 1980; Cotton, 2001; Hoffmann, 2000 cited

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in Constantine, 2000; Mehrabian & Epstein, 1972; Omdahl, 1995; Stotland, Mathews, Sherman, Hansson, & Richardson, 1978; Walter & Finley 1999). It was investigated in these studies relation between empathy and communication skills (Nadler & Nadler, 2000), helping behavior (Eisenberg, Holmgren, & Fabes, 1998; Litvack, McDougall, & Romney, 1997), sex role (Constantine, 2000; Gabay, Ochion, & Korniol, 1998; Giesbrecht, 1998), age (Schiermen & Gundy, 2000), prosocial reasoning (Eisenberg, Zhou, & Koller, 2001; Fakouri, Zucker, & Fakouri, 1991; Ickes, 1997), language aptitude and symbolic thinking (Gibbons, 1993), concern, depression and self esteem (Hickson, 1985; Watson, Biderman, & Sawrie, 1994), family structure (Guttman, 2001; Henry, Sager, & Plunkett, 1996), fatigue and job satisfaction (Spraggins, Fox, & Corey, 1990), creativity, dogmatism (Carlozzi, Bull, Ells, & Hurlburt, 1995) and relaxation styles (Weaver & Kirtley, 1995).

In this study, to determine teachers' attitudes towards empathic tendencies and eliminate their limitations, an Empathic Tendency Scale was aimed to be developed. The scale could be evaluated as an assessment tool that facilitates empathic tendencies of individuals within multi-dimensional ways of analyzing, and at the same time it serves to assess student teachers' empathic tendencies during or prior to their professional activity.

Purpose

This study aimed to develop an "Empathic Tendency Scale", which is essential to setting an alternative for existing tools to determine empathic tendencies of student teachers.

Method

Research Design

In this study, in order to determine how teachers' empathic orientation was, "Empathic Orientation Scale" was developed. Additionally, the data were collected using the descriptive research method.

Universe and Sampling

A total of 730 student teachers (513 female and 217 male) studying at Hacettepe University, Faculty of Education participated in the study. Among the sampling, there were 187 student teachers from Chemistry Education Department, 130 from Science Education Department, 123 from Biology Education Department, 116 from Math Education

Department, 86 from Physics Education Department and 78 from the Department of Computer and Education Technologies.

Process

Emphatic Tendency Scale was developed as a result of the following processes: (1) Literature scan and creation of the item pool, (2) Taking expert opinions, (3) Item-total correlations, (4) Item distinctiveness features (5) Exploratory factor analysis (6), Cronbach's Alpha internal consistency reliability, (7) Examination of correlations between subdimensions, (8) The test-retest reliability analysis, and (9) Confirmatory factor analysis.

Results

Literature scan was the first step in the development of the Empathic Tendency Scale. To determine items of the scale, scales designed for different levels were made use of and various studies were revised (Bryant, 1982; Davis, 1983; Dökmən, 1997, 2001; McAlister & Irvine, 2000; Mehrabian & Epstein, 1972; Özbay & Şahin, 2000). In addition, elements related to the empathic tendencies of student teachers as the target group were eliminated from the essays produced in a systematic way to create items. A draft scale was created after the expert opinions were taken upon the results of the literature scan.

Draft scale was administered to 730 student teachers studying at Hacettepe University, Faculty of Education. The data obtained at the end of the application were analyzed according to student teachers' responses to all of the choices or a single choice as a part of the preliminary elimination. At the end of the review, 720 pieces of data were obtained for further analysis.

Data obtained from the pilot study were applied item analysis based on item-total correlation. The item-total correlation of Empathic Tendency Scale was calculated with Pearson Correlation Coefficient. To determine the distinctive validity of the Empathic Tendency Scale, a 27% top-bottom group comparison was carried out. For each item in the draft scale applied, Independent Group T-Test was administered in order to determine the significance of the difference between the item scores of the sampling in the top (n=194) and bottom (n=194) groups. The T-test concluded that the average scores of student teachers in the top and bottom groups had significant differences. The averages of the bottom group student teachers at the Item No. 29 were found to be higher than that of the student teachers in the top

group. In addition, the t-values of Items 2, 24 and 31 were significantly lower than those of the other items. Therefore, items 2, 24, 29 and 31 were removed from the draft scale as they affected the internal consistency of the scale on the negative.

To determine the structural validity of Empathic Tendency Scale, factor analysis was carried out as a multivariate statistical technique, where a small number of many variables related to each other are used to form independent factors (Bindak, 2005; Büyüköztürk, 2004; Cronbach, 1990; Demirel, 2003; Hair, Black, Babin, Anderson, & Tatham, 2006; Özdamar, 1997; Özgüven, 2004; Tavşancı, 2010; Tezbaşaran, 1997). Statistical analysis of the Empathic Tendency Scale was made through Principal Components Analysis with Varimax Rotation, which aims to obtain variable reduction and significant conceptual structures in large sampling groups. Rotation process, which was carried out through Varimax Vertical Rotation technique as a technique widely used in social sciences, three factors emerged with eigenvalues over 1.00.

The values of the three factors obtained at the end of the factor analysis were analyzed and the contributions of the factors to the total variance were calculated to be 19.7% for the first factor, 1.14 for the second factor, and 17% for the third factor. The contribution of the three factors to the total variance together was calculated to be 50.89%. According to Scherer, Wiebe, Luther, and Adams (1988 cited in Tavşancı, 2010), explained variance shall be between 40% and 60% in social sciences to be considered as adequate. Therefore, the high proportion of explained variance means that the Empathic Tendency Scale has a strong factor structure. As a result of the factor analysis, variables collected under the three factors were determined. Naming of these factors was carried out as follows: The first factor consists of 12 items and contains expressions of empathy skills. Therefore, the first factor was named as the "Empathic Skill". Items listed under this factor could be exemplified with the "Teachers should make their students feel that they are different and valuable" statement. The second factor bears 9 expressions on the establishment of the empathic environments and was named as "Empathic Environment". One of the items was "Teachers should provide learning environments, where students can express themselves freely". The third factor consisted of 8 statements expressing the lack of ability to empathize and was therefore named as "Anti-empathic Attitude". Anti-empathic Attitude could be exemplified with the "No matter how much willing a teacher is, s/he could never understand a student's thoughts and feelings by

putting himself/herself in place of him/her" statement.

In order to prove that the three subdimensions of the Empathic Tendency Scale assessed the same feature, Pearson Multiplied Moments Correlation Coefficients were calculated. As a result of the correlation analysis, a positive relationship was found between the scale factors ($r = .76$, $r = .59$ $r = .55$, $p = 0.0001$). The consistent factor structure of the scale developed supports its validity as well. In other words, the factor variables could be evaluated as complementary to each other.

For demonstrating the internal consistency of the draft scale Cronbach Alpha reliability coefficients and item-total correlations were calculated separately for the entire scale and each subdimension. As a result of the statistical analysis made in order to question the consistency of the draft scale Cronbach's alpha (α) reliability coefficient was determined to be .94. In addition, Cronbach Alpha (α) reliability coefficients of the Empathic Tendency Scale was calculated to be 0.91 for the first subdimension, 0.88 for the second dimension, and 0.82 for the third dimension. Nunnally (1967), reports that depending on the alpha (α) coefficient, if the reliability of a scale is $80 \leq \alpha < .100$ of the scale, then this indicates that the scale is highly reliable. In this case, the items of the Empathic Tendency Scale could be considered as consistent with each other and they have the same characteristics. In addition, to determine the consistency of Empathic Tendency Scale, the test-retest reliability was also investigated. The statistical analysis of the data was administered to 60 student teachers twice in thirty days, and as a result of the analysis performed, the correlation coefficient was found to be .83. In other words, relations between scale items in the two applications, a high level of significance was determined. According to the results obtained, Empathic Tendency Scale is acceptably reliable for the research in social sciences.

An exploratory factor analysis was used to determine the validity of the scale developed in this study; however, the scale development process was not limited to that. Confirmatory factor analysis was carried out in order to determine whether the model obtained as a result of the exploratory factor analysis would support the expected theoretical structure. The number of data obtained in this study (720) is equal to the suggested size in terms of structural equation modeling (Kline, 2005). This data collection tool developed in order to determine student teachers' empathic tendencies has 29 items with three dimensions. Confirmatory factor analysis performed over the three factors concluded that the difference observed between the expected covariance matrix and the observed matrix was signifi-

cant at the .01 level. Additionally, the obtained χ^2/df result was 3.02, which indicates the perfect coherence (Kline). The RMSEA value of .05 is another finding that supports the perfect coherence (Brown, 2006; Çokluk, Şekercioğlu, & Büyüköztürk, 2010; Jöreskog & Sörbom, 1993; Raykov & Marcoulides, 2006; Schumacker & Lomax, 1996; Sümer, 2000). As the coherence indexes were analyzed, the GFI was found to be .90 and the AGFI was calculated as .88, respectively. In other words, while GFI indicated a good coherence, AGFI indicated a weak coherence (Hooper, Caughran, & Mullen, 2008; Sümer). The coherence index of standardized RMR, which was found to be .033, and NNFI and CFI coherence indexes as .98 are other findings supportive of perfect coherence (Brown; Byrne, 1998; Sümer; Tabachnick & Fidell, 1996, 2001). Therefore, the results of confirmatory factor analysis of the scale supported the fact that it had a three-dimensional structure.

Discussion

Individuals with high empathic tendency levels act constructively within their attempts to understand others and consider the other parties during conflicting situations (Rehber & Atıcı, 2009), empathic tendencies and skills of student teachers should be sufficient. According to Perry (1968), mental and moral development in the first years of university depend on strict and external authorities; as well, the more strict an individual's mental and moral development is, the more the individual tends to act strictly in empathizing (Davis, 1982). Therefore, before starting their teaching profession, student teachers should experience required educational activities to attain empathic skills and to determine their empathic tendencies. Although empathic behaviors could not be taught directly to individuals, some activities could be taught to enable them to uncover their weaknesses and strengths, reveal their existing empathic values and increase their self-awareness. In other words, it is not easy to teach empathy (Okvuran, 1993); however, assistance could be provided for the formation of empathy (Davis, 1968; 1982; Ford, 1979 cited in Uğur, 2007; Kohlberg, 1969 cited in Okvuran, 1993; Rogers, 1975 cited in Yıldırım, 1992). In fact, the literature contains studies supportive of the fact that empathy levels of student teachers could be improved gradually in time (Ergül, 1995; Mete & Gerçek, 2005). Empathy is a process, which is more complex than feeling and thinking of an individual in place of another (Stein, 1970) has been subject to various studies on developing data collection tools

to assess empathic tendencies on scientific basis (Dökmen, 1988; Özbay & Şahin, 2000).

The population of the studies about empathy was formed generally adolescent (Alisınanoğlu & Köksal, 2000; Hasdemir, 2007; Özgan, 1999; Yılmaz, 2009), medical personel (Cengiz, 2008; Sütcü, 2009), students (Beyazid & Küçükkaragöz, 1996; Sarmusak, 2011; Ural, 2010; Uyaroğlu, 2011), school administrators, teachers and preservice teachers (Akbulut, 2010; Alçay, 2009; Dev, 2010; Ekinci, 2009; Katman, 2010; Seven, 2010; Tuncay, 2009). It's seen that, it was investigated in these studies relation between empathy and facial expression (Dökmen, 1987), teacher-student communication (Şimşek, 1995), psychodrama training (Beyazid & Küçükkaragöz; Kaner, 1991), concern (Akçalı, 1991), ethical behavior (Erken, 2009), job satisfaction (Tekmen, 2010), personality characteristics (Aydın, 2011; Kiraz, 2011), life quality (Pelendecioğlu, 2011) and other many variables (Duru, 2002; Erçoşkun, 2005; Karabağ, 2003; Kılıç, 2005; Öner, 2001; Özbel, 2004; Uçmaz, 2004; Uğur, 2007; Yıldırım, 1992; Yılmaz, 2003).

In the studies it's pointed that the empathy level of pre-service teachers' could improve and increase in time (Ekinci & Aybek, 2010; Karahan, Sardoğan, Güven, Özkanlı, & Dicle, 2006; Karakaya, 2001; Murat, Özgan, & Arslantaş, 2005 cited in Pala, 2008). In this study, the Empathic Tendency Scale was developed in order to set an alternative to the existing tools aiming to determine empathic tendencies of student teachers.

Findings of validity and reliability studies indicate that the Empathic Tendency Scale sets a reliable and valid tool for determining student teachers' empathic tendencies. It is suggested that the Empathic Tendency Scale should be administered to student teachers of other fields and program types and reevaluated in terms of its validity and reliability to serve better to the scale itself and the field of research.

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